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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,222	09/04/2001	Yongping Fan	2207/11986	2631
23838	7590	03/31/2005	EXAMINER	
KENYON & KENYON 1500 K STREET, N.W., SUITE 700 WASHINGTON, DC 20005			DOLAN, JENNIFER M	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 03/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/944,222

Applicant(s)

FAN ET AL.

Examiner

Jennifer M. Dolan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 10-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/4/01</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-9 in the reply filed on 12/28/04 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 10-25 have been withdrawn from further consideration pursuant to as being drawn to a nonelected invention.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S.

Patent No. 6,429,685 to Stockstad.

First Interpretation:

Regarding claims, 1, 7, and 9, Stockstad discloses a termination resistor (see column 3, lines 15-20; column 5, lines 15-30; termination circuit 100 has a linear IV response; see figure 1), comprising: a first transistor (108), a second transistor (107) coupled to the first transistor (through resistor 127), a third transistor (101) coupled to the second transistor (gate-to-gate); and

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a first resistor (127) coupled to the first transistor (figure 1). Regarding claim 7, Stockstad discloses a differential amplifier (131) coupled to the first transistor (figure 1). Regarding claim 9, Stockstad discloses that the first transistor comprises a source coupled to the first resistor (at node 103).

Second (Alternate) Interpretation:

Regarding claims 1, 7, and 8, Stockstad discloses a first transistor (108); a second transistor (107) coupled to the first transistor (figure 1), a third transistor (101) coupled to the second transistor (see figure 1); and a first resistor (121) coupled to the first transistor (figure 1; coupled through capacitor 133). Regarding claim 7, Stockstad discloses a differential amplifier (131) coupled to the first transistor (figure 1) and a second resistor (127) coupled to the differential amplifier (figure 1).

Regarding claims 2-4, Stockstad discloses that the transistors are NMOS devices (column 9, lines 20-25) and/or PMOS devices (column 3, lines 35-40, lines 53-55; column 4, lines 32-35).

Regarding claim 5, Stockstad discloses that the resistor is a poly resistor (column 5, lines 23-30; column 10, lines 45-50).

4. Claims 1-3, 7, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,560,290 to Ahn et al.

Regarding claims 1, 7, and 8, Ahn discloses a termination resistor (termination circuit 114; figure 6; termination circuit has "resistor" characteristics; figure 7), comprising: a first transistor (MO), a second transistor (M1) coupled to the first transistor (figure 6; gate-to-gate

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contact), a third transistor (M2) coupled to the second transistor (figure 6), and a resistor (Re, 606) coupled to the first transistor (figure 6). Ahn further discloses a differential amplifier (618) coupled to the first transistor, and a second resistor (612) coupled to the differential amplifier (figure 6).

Regarding claims 2 and 3, Ahn discloses that the transistors are PMOS devices (column 3, lines 47-55).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. in view of the IEEE article to Griffin et al. (Aug. 1999, cited by applicant).

Ahn discloses that the first resistor in the termination resistor is an external resistor (figure 6, column 7, lines 12-18)

Ahn fails to disclose that the first resistor includes a PMOS device.

Griffin discloses that the use of an active resistor, comprising MOS transistors, can provide a high degree of I-V linearity over a large signal range, and additionally, can enable greater integration of a circuit structure (see Griffin, sections II-IV).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the external resistor of Ahn with a resistor including PMOS structures, as suggested by Griffin. The rationale is as follows: A person having ordinary skill in the art would have been motivated to use the MOS resistor structure of Griffin in place of the external resistor of Ahn, because Griffin shows that the MOS resistor has sufficient linearity and range to act as an active resistor (see Griffin, sections II-IV). Additionally, a person skilled in the art would further desire to use MOS resistors, because such devices can be easily integrated in a CMOS structure, which eliminates the need for bonding an external resistor and decreases the complexity of fabrication. Since Ahn teaches the use of both PMOS and NMOS transistors in the termination structure, it would be reasonable and appropriate for a person skilled in the art to select a MOS active resistor (as in Griffin) using either NMOS or PMOS devices, so that the resistor fabrication is compatible with the fabrication steps used to produce the other NMOS and PMOS transistors.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 6,525,558 to Kim discloses a programmable termination resistor using MOS transistors and resistors.
- b. U.S. Patent No. 5,680,060 to Banniza et al. discloses an alternate arrangement for providing a termination resistor using MOS transistors and resistors.

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- c. U.S. Patent No. 6,424,169 to Partow discloses general information on active resistors formed by providing a transistor and resistor pair.
- d. U.S. Patent No. 5,329,190 to Igarashi discloses a termination circuit using a plurality of MOS transistors and resistors.
- e. U.S. Patent No. 6,362,655 to Abraham et al. discloses a linear active resistor for circuit termination using a plurality of MOS transistors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Dolan whose telephone number is (571) 272-1690. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer M. Dolan
Examiner
Art Unit 2813

jmd


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
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